CLAIMS (TI-34861)

What is claimed is:

1. A discrete multitone hyperframe structure, comprising:

(a) for each n where n is an integer with $1 \leq n \leq N$ and N is an integer greater than 2, a first sequence of n first frames for transmission in a first direction in a first set of subchannels and transmission in a second direction in a second set of subchannels where said first and second directions differ and said first and second sets are different; and

(b) a second sequence of at least N–2–n second frames for transmission in said second direction in both said first set and said second set of subchannels.

2. The structure of claim 1, further comprising:

(a) when $n \leq N-2$ a third frame between said first sequence and said second sequence where said third frame is for transmission in said second direction in said second set of subchannels and no transmission in said first set of subchannels.

3. The structure of claim 1, wherein:

(a) the power spectral density for said transmission in said second direction in said second set of subchannels is the same for said first frames and said second frames.

4. The structure of claim 2, wherein:

(a) the power spectral density for said transmission in said second direction in said second set of subchannels is the same for each of said first, second, and third frames.

5. The structure of claim 1, wherein:

(a) $N = 20$.

6. The structure of claim 1, wherein:

(a) $N = 68$; and

(b) an addition sync symbol is transmitted between hyperframes.

7. The structure of claim 1, wherein:

(a) the first and second sets of subchannels are non-overlapping.

8 A method of initialization for a multitone system, comprising:

(a) comparing upstream and downstream data rates for a two-band duplex to threshold data rates; and

(b) when said data rates fail to meet said threshold data rates in step (a), comparing data rates for a hybrid duplex to said threshold data rates, wherein said hybrid duplex uses hyperframes with structure:

(i) for each n where n is an integer with $1 \leq n \leq N$ and N is an integer greater than 2, a first sequence of n first frames for transmission in a first direction in a first set of subchannels and transmission in a second direction in a second set of subchannels where said first and second directions differ and said first and second sets are different; and

(ii) a second sequence of at least N–2–n second frames for transmission in said second direction in both said first set and said second set of subchannels.